# SureBuilT Manufacturing

## Stay-Box System

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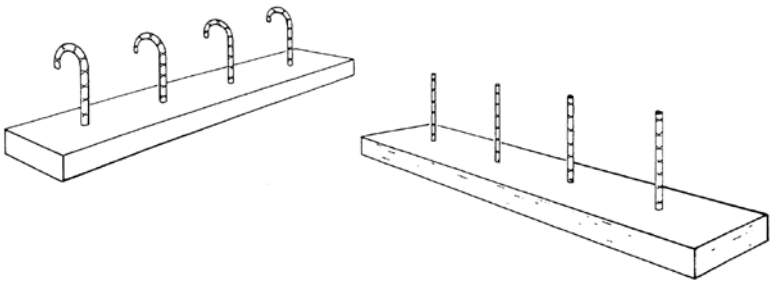
Stay-Box (Rebar-Dowel Bar Key Way) is a two piece system of pre-assembled rebar and box keyway unit.

Box is made in two half from plain steel or galvanized sheet metal per customer requirement. Typical dimensions of box are: 1.5″ deep; 2.5″, 3.5″, 6″ or 8″ wide by 48″ long. Those are standard sizes but product can be fabricated in almost any shape required.

The two part box is designed so back portion of box remains, front portion removes allowing access to the bend out portion of rebar. The box itself and both ends are taped together. Simply nail box to form installation.

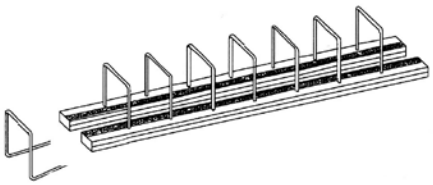


| STANDARD STYLES |
|---|
| Hook Rebar Single Row 12″ C.C.<br>Width: 3-1/2″<br>Thickness: 1-1/2″ |
| Straight Rebar Single Row 12″ C.C.<br>Width: 3-1/2″<br>Thickness: 1-1/2″ |
| Loop Rebar Single Row 12″ C.C.<br>Width: 6-1/2″<br>Thickness: 1-1/2″ |

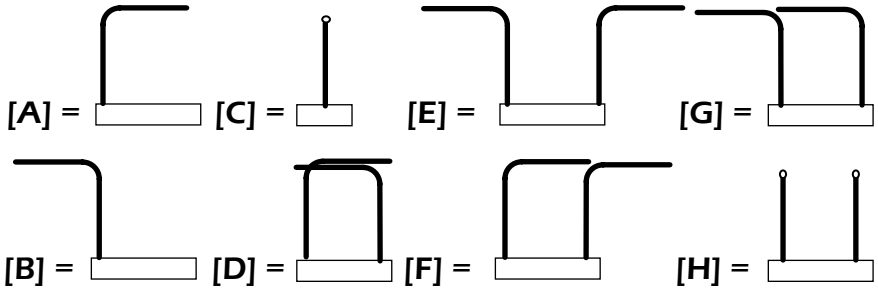
**Ordering info:**
ALL BENDS CONFORM TO ACI 318-77 REV. 1980
Special or non-stock sizes - P.O.A.

**Many different styles:**
3 sizes: #3, #4, #5 A706 Both plain and epoxy

**Double Row:**
Contact sales representative for pricing.



## Different Types




**END VIEW**

Can be used in slabs and vertical wall joints to form both keyway and rebar dowels.

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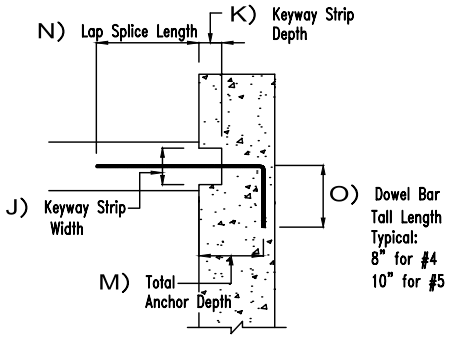
**Typical side view of unit**




Dowel Bar Tall Length (inches)

# Proper straightening procedures

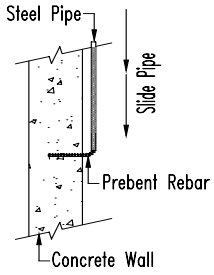
**IMPORTANT**: The probability of rebar breaks and cracks during straightening increases with cold bar temperatures and impact. User can significantly decrease the potential incidence of bar breaks or cracks when straightening if:

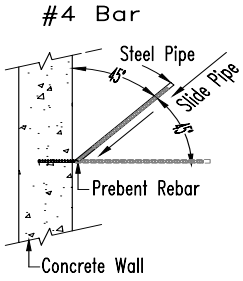
- The bar is free of frost and his temperature is above freezing.
- The bars are straightened with a proper inside diameter pipe in a 2 step process as described below.

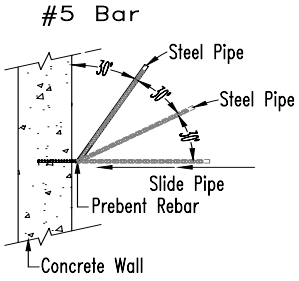
**STEP 1**: Pry out 90˚ prebent rebar enough to allow steel pipe to slide over it. In some cases a crowbar may be necessary. Push pipe as tight as possible against factory bend. **DO NOT ATTEMPT TO RE-STRAIGHTEN REBAR WITHOUT PIPE!**

**STEP 2**: Once the pipe is as tight as possible against the factory bend, the rebar can be straightened using the pipe. Continue straightening until the position of #4 bars reach approximately 45˚ and the position of #5 bars reach approximately 30˚. Then slide the pipe fight against the factory bend again and continue to bend #4 bars through another 45˚ and #5 bars through another 30˚. The #4 bars will then be straightened, while the process described above need to be repeated through another 30˚ for #5 bars. If properly executed, these procedures should result in offsets or kinks in the bend region between one-half and three-quarters of a bar diameter.

**IMPORTANT**: Proper field restraightening procedures require that workmen have a firm footing from which to apply straightening pressure. A firm base is, of course, also important to reduce risk of injury if the bar would suddenly break during straightening.



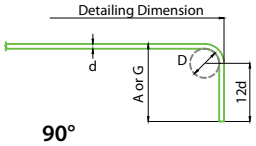

# Standard Hook Details

In accordance with ACI 318-83 All Grades

SPECIAL JOB REQUIREMENTS? Please, call us for a quotation on nonstandard Stay-Boxes manufactured to meet your project custom specifications and conditions.

| STAY-BOX TYPE | STANDARD BOX + COVER | | | |
|---|---|---|---|---|
| | G | I | H | Wt. (lb) Ea. |
| 60S | 2-1/2" | 2" | 1-1/2" | 2.7 |
| 100S | 3-1/2" | 3" | 1-1/2" | 5.1 |
| 160D | 6" | 5-1/2" | 1-1/2" | 6.3 |
| 160DD | 6" | 5-1/2" | 1-1/2" | 5.3 |

D - Finished inside bend diameter
d - Bar diameter
D = 6d for #3 through #8




90°

| RECOMMENDED END HOOKS, ALL GRADES | |
|---|---|
| BAR SIZE | 90° HOOK |
| | A or G |
| #3 | 6" |
| #4 | 8" |
| #5 | 10" |

| INCHES OF LAP CORRESPONDING TO NUMBER OF BAR DIAMETERS* | | | |
|---|---|---|---|
| Number of Diameters | SIZE OF BAR | | |
| | #3 | #4 | #5 |
| 20 | - | - | 13 |
| 22 | - | - | 14 |
| 24 | - | 12 | 15 |
| 30 | 12 | 15 | 19 |
| 32 | 12 | 16 | 20 |
| 36 | 14 | 18 | 23 |
| 40 | 15 | 20 | 25 |
| 48 | 18 | 24 | 30 |

*Minimum Lap = 12"

# RECOMMENDED INDUSTRY PRACTICE - DETAILING
# STANDARD HOOKS

*All specific sizes recommended by CRSI below meet minimum requirements of ACI 318.*

RECOMMENDED END HOOKS
All Grades
D = Finished bend diameter

| BAR SIZE | D (in.) | 180° HOOKS | | 90° HOOKS |
|---|---|---|---|---|
| | | A or G | J | A or G |
| #3 | 2-1/4 | 5 | 3 | 6 |
| #4 | 3 | 6 | 4 | 8 |
| #5 | 3-3/4 | 7 | 5 | 10 |
| #6 | 4-1/2 | 8 | 6 | 1-0 |
| #7 | 5-1/4 | 10 | 7 | 1-2 |
| #8 | 6 | 11 | 8 | 1-4 |
| #9 | 9-1/2 | 1-3 | 11-3/4 | 1-7 |
| #10 | 10-3/4 | 1-5 | 1 - 1-1/4 | 1-10 |
| #11 | 12 | 1-7 | 1 - 2-3/4 | 2-0 |
| #14 | 18-1/4 | 2-3 | 1 - 9-3/4 | 2-7 |
| #18 | 24 | 3-0 | 2 - 4-1/2 | 3-5 |

STIRRUPS (TIES SIMILAR)
STIRRUP AND TIE HOOK DIMENSIONS
Grades 40-50-60

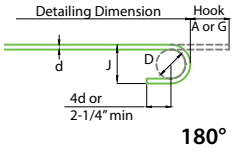
| BAR SIZE | D (in.) | 90° HOOKS | | 135° HOOKS |
|---|---|---|---|---|
| | | HOOK A or G | HOOK A or G | H Approx. |
| #3 | 1-1/2 | 4 | 4 | 2-1/2 |
| #4 | 2 | 4-1/2 | 4-1/2 | 3 |
| #5 | 2-1/2 | 6 | 5-1/2 | 3-3/4 |
| #6 | 4-1/2 | 1-0 | 8 | 4-1/2 |
| #7 | 5-1/4 | 1-2 | 9 | 5-1/4 |
| #8 | 6 | 1-4 | 10-1/2 | 6 |

135° SEISMIC STIRRUP/TIE
HOOK DIMENSIONS
Grades 40-50-60

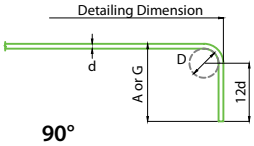
| BAR SIZE | D (in.) | 135° HOOKS | |
|---|---|---|---|
| | | HOOK A or G | H Approx. |
| #3 | 1-1/2 | 4-1/2 | 3 |
| #4 | 2 | 4-1/2 | 3 |
| #5 | 2-1/2 | 5-1/2 | 3-3/4 |
| #6 | 4-1/2 | 8 | 4-1/2 |
| #7 | 5-1/4 | 9 | 5-1/4 |
| #8 | 6 | 10-1/2 | 6 |

**NOTES:**

1. 180° hook J dimentions (sizes #10, #11, #14 and #18), and A or G dimension (#14 and #18) have been revised to reflect test research using ASTM/ACI bend test criteria as a minimum.
2. Tables for stirrup and tie hook dimensions have been expanded to include sizes #6, #7 and #8 to reflect current design practices.

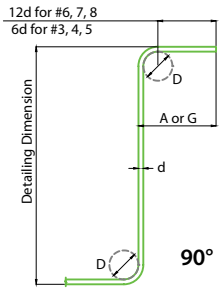


180°

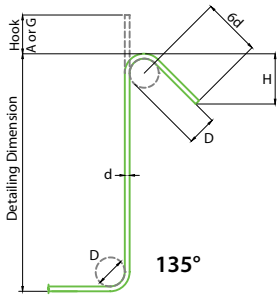


90°

**STIRRUP AND TIE HOOKS**

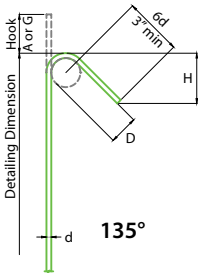


90°



135°

**135° SEISMIC STIRRUP /TIE HOOKS**



135°

**REINFORCING BAR DATA**

| BAR SIZE | WEIGHT | | Diameter (in.) | Cross Sectional Area (sq.in.) | Standard Hook Ends "B" Dimension | 90° HOOKS | | | | | | | | Splice Development "C" Lenghts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | #/in. | #/ft | | | | | | | | | | | | |
| #3 | .031 | .376 | .375 | .11 | 6" | - | - | - | 12 | 12 | 14 | 15 | 18 | |
| #4 | .056 | .668 | .500 | .20 | 8" | - | - | 12 | 15 | 16 | 18 | 20 | 24 | |
| #5 | .087 | 1.043 | .625 | .31 | 10" | 13 | 13 | 15 | 19 | 20 | 23 | 25 | 30 | |
| #6 | .125 | 1.502 | .750 | .44 | 12" | 15 | 17 | 18 | 23 | 24 | 27 | 30 | 36 | |
| #7 | .170 | 2.044 | .875 | .60 | 14" | 18 | 20 | 21 | 27 | 28 | 32 | 35 | 42 | |
| #8 | .223 | 2.670 | 1.000 | .79 | 16" | 20 | 22 | 24 | 30 | 32 | 36 | 40 | 48 | |
| #9 | .283 | 3.400 | 1.128 | 1.00 | 19" | 23 | 25 | 27 | 34 | 36 | 41 | 46 | 55 | |
| #10 | .359 | 4.303 | 1.270 | 1.27 | 22" | 26 | 28 | 31 | 38 | 41 | 46 | 51 | 61 | |
| #11 | .443 | 5.313 | 1.410 | 1.56 | 24" | 32 | 35 | 38 | 47 | 50 | 57 | 63 | 75 | |
| #14 | .638 | 7.650 | 1.693 | 2.25 | 31" | 45 | 50 | 54 | 68 | 72 | 81 | 90 | 108 | |
| #18 | 1.133 | 13.60 | 2.257 | 4.00 | 41" | 80 | 88 | 96 | 120 | 128 | 144 | 160 | 192 | |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